Middle East Technical University **Department of Computer Engineering**

CENG 454

Introduction to Software Architecture

Spring 2020-2021

PROJECT DESCRIPTION

Short Descriptiption

Your assignment is about developing combined Feature and Process models for a partial development of a 'Webinar' application. You are given a base project that you are expected to modify.

Development Environment

For this project, we will be using the Eclipse IDE with BPMN, Feature IDE and Maven plug-ins. You can download configured development environment from the links below. You are free to configure your own environment, but we strongly recommend you to use the shared ones to prevent possible compatibility issues. If you have to use a device with MAC OS operating system, contact us.

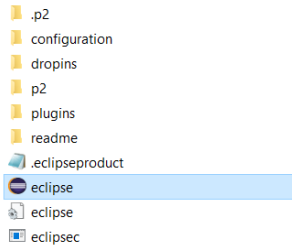
Windows: https://drive.google.com/file/d/1mT564YuAwJ7ZAwWgxFYY2lratIsSDIUL

Workspace: https://drive.google.com/file/d/1yteOyUJNmEQkArixkTOPRqzNkhvqA3Xy/

Development environment includes:

- Eclipse IDE for Java Developers (includes Incubating components) – for Windows
  Version: 2020-12 (4.18.0)
- Plugins Installed
  1. BPMN Plugin
     - Name: BPMN2 Modeler - Diagram Editor
     - Identifier: org.eclipse.bpmn2.modeler.feature.group
     - Version: 1.5.2.SNAPSHOT-v20200602-1600-B1
  2. FeatureIDE Plugin
     - Name: FeatureIDE
     - Identifier: de.ovgu.featureide.feature.group
     - Version: 3.7.0.202010141034
  3. Maven Plugin
     - Name: m2e - Maven Integration for Eclipse (includes Incubating components)
     - Identifier: org.eclipse.m2e.feature.feature.group
     - Version: 1.17.1.20201207-1112

- If you want to use Eclipse that we prepared for you, you can follow the steps below:
    1. Unzip eclipse.zip file in a folder
       Note: "eclipse" folder contains installation of Eclipse with the plugins



    2. Double-click eclipse.exe and choose an empty folder as a workspace
    3. If Eclipse has launched without any error, Installation is successful.

Import/Run Sample Webinar System Projects

1. Unzip workspace.zip file in another folder
   Note: "workspace" folder contains sample projects
2. Now, you can test sample projects
    a. In "eclipse" folder double click eclipse.exe
    b. Choose this "workspace" folder while launching
        - If you see "WebinarBPMN" and "WebinarLight" projects on Eclipse's Project Explorer window, you can directly run the projects
          https://vimeo.com/544214139/25813f6a5a
    c. If you can't see the projects, follow the steps below
        - File Tab – Open Projects From File System
        - Choose workspace folder as "Directory"
        - Then choose the projects' folders
            - WebinarBPMN
            - WebinarLight
        - Click "Finish" button and Open the projects
          https://vimeo.com/544216484/1a5ada0e3f
    d. Project Tab – Clean both projects

    Note: Cleaning project will trigger Eclipse to download needed jars through the Internet to a local folder named .m2. When you try to run the program for the first time, it may take some time to configure the eclipse.

1. WebinarLight Project

a. Right click WebinarLight Project
b. Run As – Java Application
c. If the following output appears on console, the Project can be used as a base

```
Webinar
All files are deleted
- Pass Presenter
File is updated
- Chat Messaging
File is updated
```

2. WebinarBPMN

a. Right click BPMNTest.java file (located in WebinarBPMN\src\main\java\com\sample\)
b. Run As – Java Application
c. If the following output appears on console, the Project can be used as a base

```
Login
Register to a Seminer
Show BreakOut Rooms
Enable Chat Messaging
Show WhiteBoard
Keep Records
Start Seminar
Attend Seminar as Listener
BPMN-Run has finished
```

Workspace Details

WebinarLight: Feature IDE Project

- src: automatic generated Java files
- configs: an xml file that presents modifiable features (as variability model)
- features: folders for each feature (.jak files)
- processes: difference XML files for each changeable features

Note: Please, do not create any Java files in src folder, you can lose your work. Because when the project runs, Feature IDE deletes all files from "src" folder and creates auto generated Java files.

WebinarBPMN: Maven Project

- src: contains Java files
  - BPMNTest.java: sample code to pass parameters to the BPMN file and run it
- resources/process: When WebinarLight runs, it creates BPMN files here according to the configuration of feature model

Note: Do not auto indent BPMN files. While running BPMN files, indented BPMN files cause run-time errors.

Project (Webinar)

We have already prepared a workspace and created sample projects. You will be using/modifying the these existing projects. The workspace includes lite versions of a feature model with its configuration file and a process model (BMPN 2.0) of the Webinar System given in the written homework.

Phase-1

WebinarLight project contains a lite version of the feature model and configuration file. Based on these implementation, a Process Model is generated in the WebinarBPMN project.

In this phase, we are expecting you to

- Complete this Feature Model based on your design using the FeatureIDE graphical interface.
- Complete the Process Model Based on your design using the BPMN graphical interface.
- Modify the configuration file by preparing difference XML files for each feature so that the BPMN diagram can be generated based on the selections made on the Feature Model.
  Note: BeyondCompare is a helpful tool to prepare "Difference XML Files".

Phase-2

BPMN 2.0 allows for the Java method calls to be made directly from the diagram.
In this phase, we are expecting you to

- Select 3 tasks from your design that are important for the functionality of the system
- Implement 3 methods
- Define sample Java scripts to call 3 implemented methods.
- You can show the results of these method calls from the console or a user interface.

Submission and Deadlines

We will make a recitation in order to demonstrate the development environment on Tuesday, May 18 during class hour.

Phase-1 until Sunday, May 30, 2021.

Phase-2 until Sunday, June 20, 2021.

You will work as groups that you formed via ODTUCLASS. You will submit a report after each phase that includes a title page and your group id, student IDs and names of group members. Name your project report as Phase#-ProjectReport<GroupNumber>.pdf.

Compress your workspace (including all directories related to this project) and your report into a single file as Group<GroupNumber>.zip and submit through OdtuClass. Only one submission for each group.